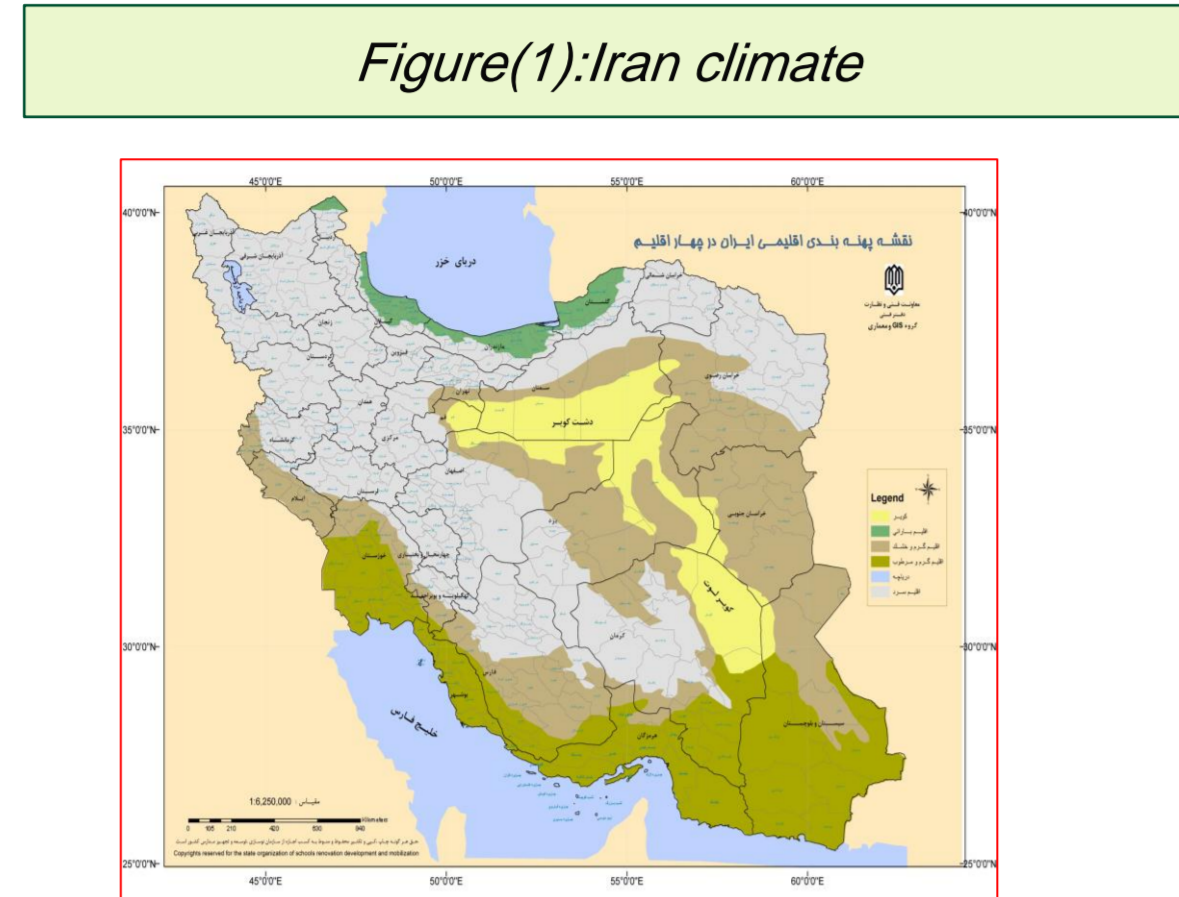


## 1. Floods in Iran

Iran has an arid and semi arid climate . The average rainfall in Iran is 45 mm (one third of universal rainfall) that 30%of rainfall infiltrates to the ground and the rest of it forms run off.



Iran has 156000 rivers. Iran is the sixth disastrous country among 10 top countries in the world. Happening all kind of natural disaster in it that earthquake, flood and storm is the most important of them. flood has the most likelihood and increase the damages and death due to it. Only have occurred 43 flood every year in recent decade with 135 deaths per year. According to statistics published, has happened more than 1800 floods in Iran since 1331 to 1380 and damaged 625 cites. losses is estimated more than 1500 billion Rials.

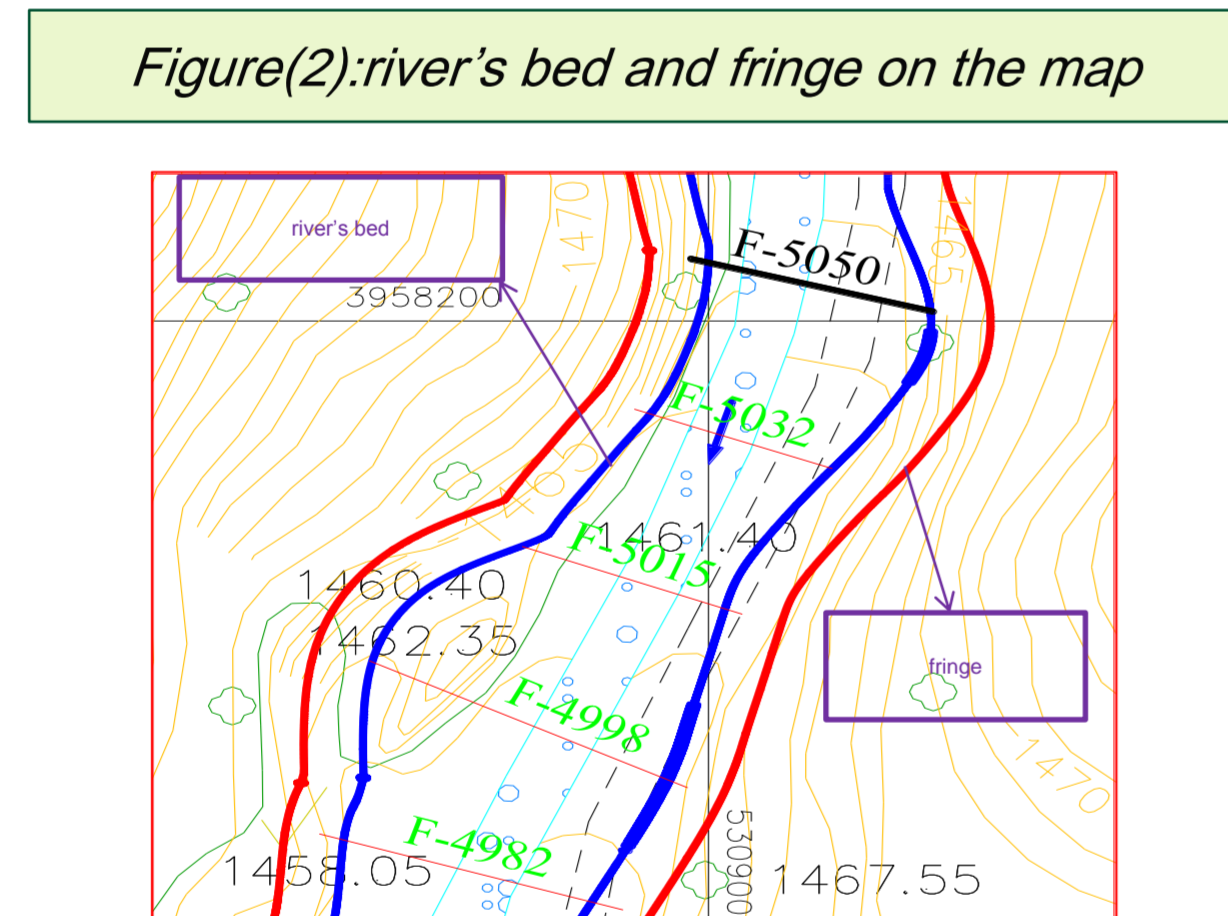
The resonator factors for flood damages are illegal occupation of river's bed and fringes, non-conformity of hydraulic criteria in construction of cross structure, illegal sand and gravel mining, shortage of local and area flood forecasting and warning system, lack of coordination between organization and related agencies for flood management, don't attention of riverside residents and travellers to warnings and notices of metrological organization.

## 2. Flood management

River conservation and operation is a non-structural method for management and control of future floods. In Iran ministry of Energy is responsible for determination of river's bed and fringe has important role on flood management, control on it and prevention of likelihood damages and decreasing flood damages in future.

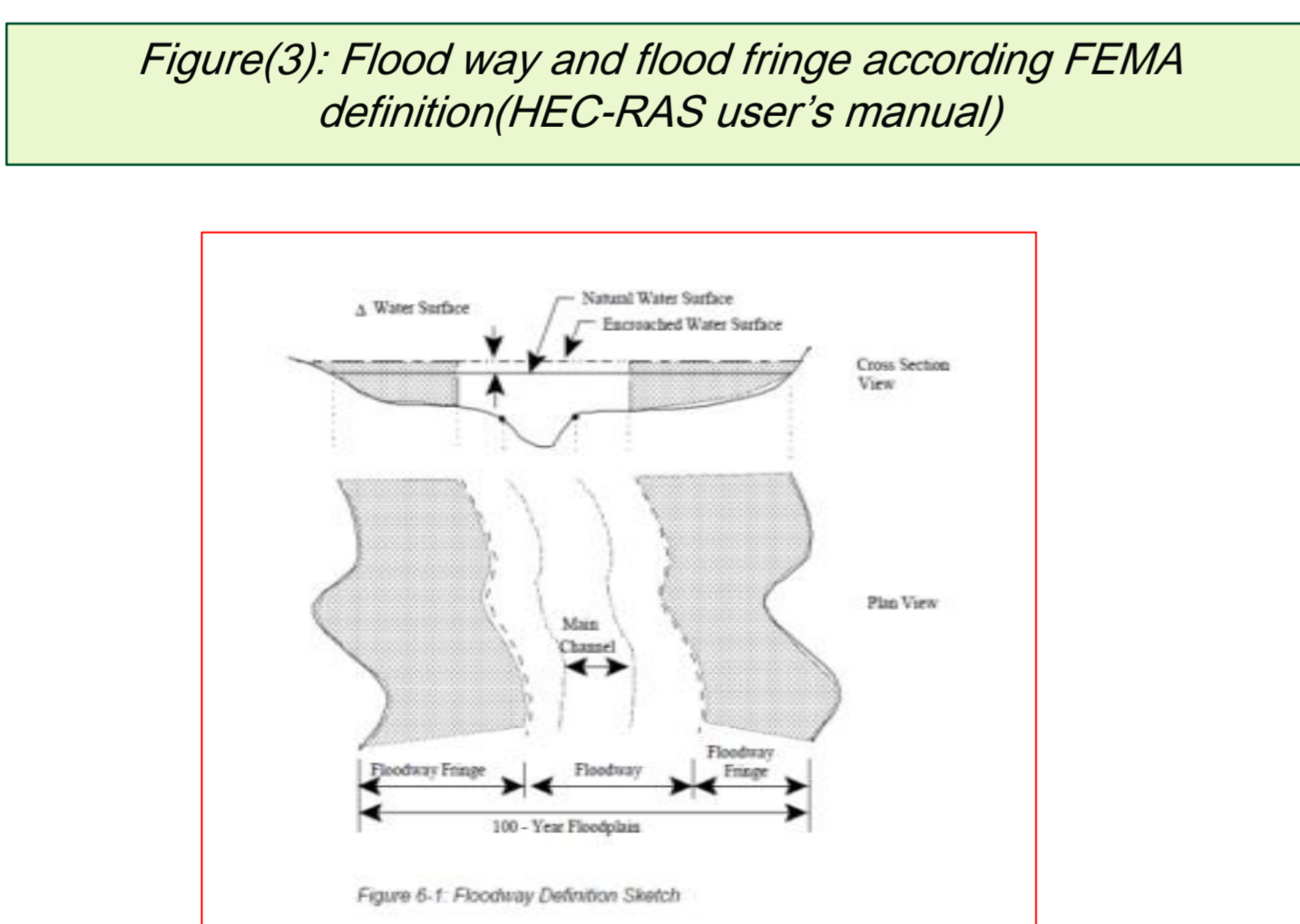
## 3. Legal implication of river's bed and fringe

As the Iran laws, the government is the owner of river's bed. The river's bed is a conduit for conduction of floods with 25 years return period according to hydrological data in the area. Quantity and quality fringes are located following the river's bed, respectively. Quantity fringe determine according "DLSLRS" instruction and has 1 to 20 meter amount. Also quality fringe has 1 to 150 meter that determine according other instruction. Fringe ownership is marginalize but construct forbidden in this area. The figure(1) shows river's bed and fringe on the map. According Iran laws, it is possible constructing temporary structure like park, parking, bower, ... out of river active bed(conduct for conduction flow with 2 to 10 return period) but it should be constructed wall against the likely floods and contract bed rents with ministry of Energy that any responsibility of flood damages is divested.



## 4. Overview of determination of river's bed and fringe in other country

Flood way is like river's bed in Iran. Flood fringe is like quantity fringe in Iran. Figure(2)shows flood way and flood fringe.



## 5. Conservation and operation actions in Iran

### 5.1. country Codification of required technical instructor

The technical structures and guides has been codified in Iran Water Resources Management Company for supervision on conservation and operation in different province of Iran in past years. "conservation, operation and release of river's bed and fringe" structure that showing the notice of technical criteria for determining river's bed and fringe, release of possessions in these area, establishment temporary structure vicinity of river. Also "provide and codification survey and awareness" structure shows the required program for awareness of people who lives adjacent to the river for broadcast from media. Figure(3) shows these codification structures.

Also required standard for determining river's bed and fringe study has been published by cooperation standard office for example river's bed and fringe description service and one stage of rivertraining(publication No.414a) and flood zoning and river's bed and fringe guide (publication No.307).

Figure(4): some published structures by river and coastal office of Iran Water Resource Management Company

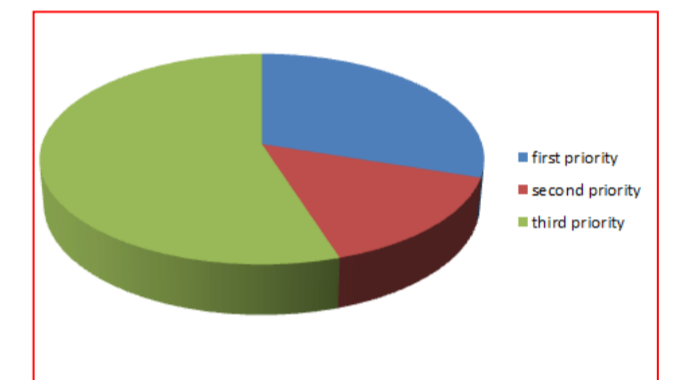


## 5.2. Supplying needed credits and studding river's bed and fringe the main rivers of Iran country

Since it is impossible determining river's bed and fringe in once because of shortage credits therefore with selecting priority index in national plan" determining of river's bed and fringe", it is determined the main Iran river's bed and fringe in different years.

According to these indexes, the first priority belong to the river that passing through in cities and rural regions, area that has high developing people and has likelihood occupation in them also the area with the high risk of flooding. The region with less flood risk being in other priority. Figure(4) shows different priorities of the Iran main rivers that has determined river's bed and fringe of them. Land marking of these area and released occupied will be done in future.

Figure(5):priority of 20000 km of the Iran main rivers



## 5.3. Improve management of sand and gravel mining

Illegal sand and gravel mining has negative effects on the river and causes destructive floods. In the past years, a lot of damages happened in rivers because of shortages of technical, management and supervision criteria and structures and also interested for withdrawal illegal sand and gravel mining and haven't awareness about negative effects on the river regime. Figure(5) shows some sever destruction because of illegal sand mining (bridge scouring and river bed). Fortunately, in these years decreased negative effects on river because of law establishment for forbidden sand and gravel mining from special area and restriction other area. River sand and gravel mining guideline(Publication NO.336) and sand and gravel mining description of service, are 2 technical criteria that have been write for supervision on sand and gravel mining in Iran.

Figure(6): some sever destruction because of illegal sand mining (bridge scouring and river bed)



## 5.4. contract river's bed rents and establishment temporary application near river

After definition river's bed and fringe and release possession in them, it is need to supervision these area from recapturing with establishment temporary application like park, parking, bicycle line, canopies and .... There for, in next step, regional water company supervision river's bed and fringe with contract river's bed rents with notice to riverside priority

## 5.5. People awareness

In these years, it is try to increased people awareness about river's bed and fringe, forbidden of construction in these area, forbidden illegal sand and gravel mining, ... for prevention severe floods happening and damage due to them with advertising in broadcasting by Ministry of Energy.

## 5.6 Employment supervising and control workers and increasing funds

After definition river's bed and fringe and specified them on the ground, it is needed to monitor and control of these area with supervising and control workers. The duty of these workers are control of river's bed and fringe, prevention of construction in these area, awareness to riverside and local organization. Figure(6) shows sample of possession in river's bed and construct the structure in 2 years.

Figure(7): some sever destruction because of illegal sand mining (bridge scouring and river bed)



In current year, planning to allotment more funds to supervision and control groups of surface water resources and rivers and establishment more workers. Also codification supervision and control description of service with cooperation different specialist.